Ionic Lite Users Manual

This is a circuit for driving compact flouresent lamp (CFL) with negative ions, and the mains voltages is 120V /60Hz,and the funtions of negative ions are as belows:

1)The negative ions can effectively activate the oxygen molecule in the air and prevent air-conditioner related disease.
2)It can improve the function of the lung.When people inhale negative ions, their lung can absorb 20% more oxygen and blow off 15% more carbon ioxide.
3)It can activate many kinds of enzyme and improve metabolism.
4)It can improve people's immunity.
5)It can make people energetic,raise efficiency and improve sleep quality.
6)Small amount of ozone will be produced when the anion generator works.Associated with negative ion,the lamp can sterilize all kinds of viruses and germs.
7)It can clear the dust and smoke by neutralizing their positive electronic charge and making them fall down.
8)It can reduce television and computer's harm to people's eyes and keep television and computer from dust.
9)The hair itself has positive ions,which will absorb dusts to its surface.A great amount of static
electron is produced when people comb their hair,which makes their hair stand.The negative ion can neutralize these static
electon and make hair fall smoothly.

Block Diagram

The CFL circuit has been designed for a nominal mains voltage of 120 Vrms, 60 Hz. The circuit consists of the folwing sections,Figure 1 shows the block diagram of the circuit.

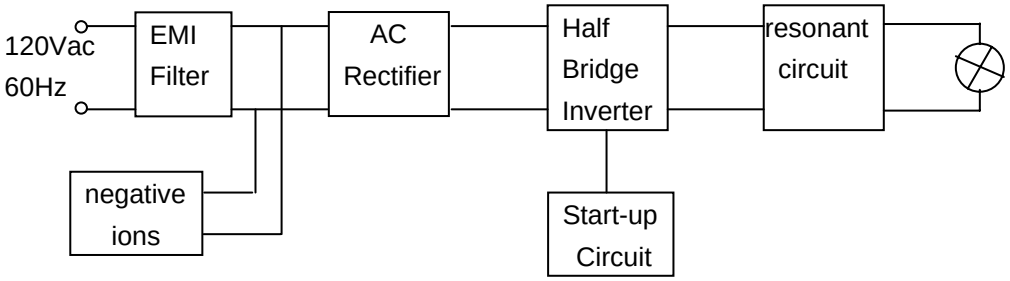

Figure 1

The AC mains voltage is rectified by four bridge rectifying diodes D1, D2, D3 ,D4 and two voltage-doubling capacitors C10 and C11, and then get a DC

supply voltage (Vdc ,it is around 300Vdc) for the half bridge inverter. An EMI-filter formed by L1 and C1, The half bridge inverter is of the voltage fed type belonging to a group of high frequency resonant inverters, which are very attractive to drive lamp circuits. They can achieve a high efficiency, due to the ZVS2 principle, so that switching losses of the two switching transistors T1 and T2 is substantially reduced.

Half Bridge Inverter

The circuit is of the instant-start type to obtain almost immediate light output. When the mains voltage is applied to the circuit, the startup circuit generates a start pulse and the circuit will generate a high AC voltage across the igniter capacitor which is connected in parallel with the lamp. Normally, the lamp will breakdown and the circuit operates in the burn phase.

Startup Phase

After switch on of the system, the rectified mains voltage is applied to the voltage-doubling capacitors C10 and C11. The result is a high DC voltage, which is an input for the half bridge inverter (power components: Vdc-C3-E-C-F-L2-N1-T2-GND).

During the startup phase, capacitor C9 is charged via the resistor R1. As soon as the voltage across C9 reaches 35 V, diac DB3 will breakdown and T2 is switched on. the half bridge midpoint voltage changes rapidly from Vdc to zero so that a positive voltage is applied to the secondary winding N3 and keeps T2 conducting. After switch-on of T2, diode D5 discharges C9 to prevent double triggering of T2. Now the circuit is oscillating and the start circuit is deactivated by diode D5.

Ignition Phase

After start, L2 and C5 form a series resonance circuit which is able to generate a large voltage across C5. The worst case ignition voltage for low temperatures.

Burn Phase

After ignition, the lamp will become low ohmic and is set to the operating point by the ballast coil L2 at a given operating frequency.

Warning:

This product complier with Part 18 of the FCC rules but may cause interference to televisions, radios, wireless remote control or maritime safety communications equipment or other critical navigation or communication equipment operation between 0.45-30MHz. If interference should occur, move the lamp away from the appliance a distance of three feet or more. Or plug the lamp or the compliance into a different outlet.